

1-28-1997

Telecommunications and Economic Development: Making the Connection in Maine, 1997

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TELECOMMUNICATIONS AND ECONOMIC DEVELOPMENT

Making the Connection in Maine



Prepared by the

Maine State Planning Office

January 28, 1997

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TELECOMMUNICATIONS AND ECONOMIC DEVELOPMENT

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I. EXECUTIVE SUMMARY

Noted author Dr. Stephen J. Gould has theorized that evolution in the natural world is not characterized by a steady progression of small changes but punctuated by a series of sudden and dramatic ones. For the telecommunications industry, Congress' enactment of the Telecommunications Act of 1996 (Telecomm Act) is one such evolutionary event, at once an example and a primary agent of significant market and regulatory changes now unfolding in Maine and the nation. Maine's Department of Economic and Community Development (DECD) requested the State Planning Office (SPO) to develop policy recommendations designed to position Maine to benefit from the emerging competitive telecommunications market and information economy. This paper is intended as a foundation for development of policies to address priority issues and opportunities.

The background information this paper provides is organized into sections examining the regulatory framework, current state and federal telecommunications laws, Maine's telecommunications rates, other recent studies of State telecommunications policy, and an outline of some of the key issues and opportunities Maine decision makers are likely to confront over the next several years. SPO assembled this background paper as a primer to assist law and policy makers, educators, and other stakeholders in identifying and prioritizing what Maine hopes to achieve in the new world of telecommunications. SPO's research builds on and is indebted to recent work of other public and private telecommunications initiatives including the Maine Project and the Maine Telecommunication Forum.

Major findings

The following are the major findings of this research effort:

Rates and Pricing Issues

- In general, Maine's telecommunications rates are high relative to other states, with the notable exception of the State's rate for basic service (local calling).
- The range of rates that competitors must pay to use NYNEX's network infrastructure to carry customer calls (access rates) network are the highest in the nation. Maine's highest access rate is over three times the national average; Maine's lowest access rate is also significantly above the national average. These rates dictate the price of in-state long distance. See Appendices, Graph One.

- Maine's in-state long distance rates (intra-LATA rates) are among the highest in the nation, see Appendices, Chart One, although there are discount plans with significantly reduced rates available to some moderate and high volume users.
- Maine's rates for basic service (local calling) are among the lowest in the nation, despite a dispersed population and settlement pattern that makes the cost to provide wire-based service in some areas of the State well above the national average.
- Applying new Federal Communications Commission pricing guidelines (interconnection rules), it appears that the average cost of providing basic service in Maine is approximately 50% higher than the amount now being charged under NYNEX's PUC approved rates.
- NYNEX's own records indicate that, in terms of percentages of revenues, the company recovers significantly less for basic service in Maine than in any other state in its service area.
- In seeking to encourage the most competitive rates, it is important to maintain a safety net for those who are unable to reap the benefits of competition.
- To the extent that available federal funds or mandated support mechanisms are inadequate, ensuring that all Maine's public schools and libraries have affordable access to the Internet and advanced telecommunications services may necessitate establishment of a fund to subsidize this investment in education.

Regulatory and Statutory Issues

- The Telecomm Act has reshaped the regulatory landscape. The Telecomm Act strives for establishment of a more uniform national market in which all may compete, in the absence of discriminatory state barriers. The Telecomm Act charges the FCC with implementing most of the Telecomm Act's major provisions through rulemaking.
- Preemption provisions in the Telecomm Act are designed to forestall or eliminate state laws and policies that might frustrate achievement of the Telecomm Act's competition oriented goals. Although the states and their utilities commissions are left with broad authority, the Telecomm Act does limit states' options in dealing with a number of issues such as establishment of wholesale rates, siting of wireless communications towers, and cable franchising.
- The Telecomm Act establishes a minimum, baseline definition of "Universal Service" that all states must adopt. If the FCC does not adequately fund the Universal Service it prescribes, or if Maine wishes to expand the scope of Universal Service required here, the State will be forced to seek funds from in-state providers and customers.
- A key issue for Maine is how to account for "potentially strandalone investment" in establishing or sanctioning telecommunications charges. In this background paper, the term "potentially strandalone investment" concerns the ability of telecommunications providers, such as NYNEX, to recover capital investments in network infrastructure through retail and wholesale rates. The magnitude and significance of this issue in the telecommunications fields much debated and its resolution may affect competitive opportunities in Maine in the short term.
- As a means to stimulate competition in providing service, the Telecomm Act requires incumbent telephone companies to provide interconnection. "Interconnection" refers to the ability of a competing telecommunications carrier to purchase from another carrier

(most typically a Bell operating company such as NYNEX) at a discounted rate services necessary to carry its customers' calls. It is worth noting that Maine's independent telephone companies enjoy a qualified status of compliance with the Act's interconnection requirements. Although the FCC's rule implementing the Act's interconnection provisions have been stayed, the Maine Public Utilities Commission, along with many other public utilities commissions, has used the methodology suggested by the FCC rules in reviewing the two interconnection agreements negotiated thus far in Maine.

Recommended Policy Guidelines

It is becoming cliché to say that the telecommunications market is changing so rapidly that it is nearly impossible to keep pace with and comprehend its many nuances, but this is increasingly true. In light of the challenge this situation presents for decision makers, SPO has identified the following three general principles gleaned from this research effort to help guide decision makers as they consider issues and plot the State's course in the telecommunications area.

- ***Focus on results not technologies.*** First, establishment of telecommunications policies that identify a set of desired results, as opposed to particular technologies or outputs, is of paramount importance. For example, the focus should be on a policy option's potential for job creation and enhancement, education, and other public benefits rather than the type of technologies or providers involved. Moreover, it is crucial to recognize that the utility of our current or a desired in-state telecommunications network is limited by the ability of users to use it efficiently and effectively. Technology is the means rather than the end, and it must be knowledgeably used to be useful.
- ***Set clear and consistent priorities.*** Outcome oriented policies must be consistent with and supportive of one another and set clear priorities. For example, realization of the State's current goal related to low priced local telephone service and the widespread recognition of the need for and economic benefits of a substantial reduction of intrastate toll rates cannot be considered independently. Current state telecommunications policies are internally inconsistent and thus do not provide sufficient direction to regulators who must balance at times competing policy goals.
- ***De-emphasize regulation as competition emerges.*** The rapid pace of technological development and the ongoing restructuring of the industry underscores the need for a comparable evolution of Maine's laws and policies that de-emphasizes regulation and relies increasingly on competition driven market forces to generate economic and other societal benefits for Maine people. Although Maine may not be the first place that most competitors target for market entry, Maine's decision makers now have a number of opportunities, many created or prompted by the Telecomm Act, to find innovative means to create a market attractive to potential competitive entrants. For example, the cost of providing wire based services to many parts of Maine is high relative to most other states, a fact that suggests policy makers should carefully explore wireless alternatives to meeting telecommunications needs and objectives. One certainty is that if Maine does not seek innovative solutions to challenges it faces the State will find itself at a distinct competitive disadvantage in the emerging information economy.

Conclusion

Although this period of rapid evolutionary change in the telecommunications industry presents many significant challenges to policy makers and regulators, Maine has a track record of success on which to build. Telecommunications intensive companies such as L. Bean, MBNA and Talk America are thriving in Maine, and are often on the cutting edge of the innovative technologies. Soon Maine will be among the first states in the nation where all schools and libraries enjoy access to the Internet. Other education initiatives now underway promise in addition to improved Internet access, the ability for schools to share resources interactively and thereby reduce the costs and increase the quality of public education. Telecommunications technology provides tools that Maine can successfully use to leverage our existing and inherent competitive advantages, such as the natural beauty of our State and the industriousness of our people, to increase opportunities for all Maine residents.

To build on these and other successes, and to build a foundation for additional and lasting success, we recommend that the State should consider policies in the following areas

- ***Improving Maine's Competitive Environment***
 - ✓ Make Maine's Instate Long Distance Rates for Small and Medium Businesses Consistent With the National Average
 - ✓ Encourage Location of New and Expansion of Existing Telecommunications Related Businesses and Industries in Maine
 - ✓ Encourage Immediate Entry by Non-Incumbent Telecommunications Providers to Both the Local and Long Distance Markets
- ***Bringing the Benefits of Technology to Maine's People***
 - ✓ Network Maine's Education and Training Facilities in a Manner That Allows Fast, Efficient and Affordable Sharing of Course Offerings and Other Information.
 - ✓ Through Deployment of Telecommunications Technology Ensure that Maine's Citizens Enjoy Access to Health Care Otherwise Available Only in Urban Centers.
 - ✓ Ensure That Maine People Have Affordable Access to Information Necessary to Best Determine Where to Spend Their Telecommunications Dollars.
- ***Using Government Assets to Advance Telecommunications Related Objectives***
 - ✓ Ensure That the State's Use of its Rights of Way and Other Public Assets Promote Competition and Ensure Long Term Public Benefit.
 - ✓ Ensure the Public Electronic Access to All Non-Proprietary Government Data and Information.

In February 1997, SPO and the Department of Administrative and Financial Services, in conjunction with other State agencies, will bring forward draft policies addressing these issues.

II. PURPOSE OF THIS REPORT

Enactment of the Telecommunication Act of 1996 is ushering in a new era for the telecommunications industry. Along with its customers, the industry faces redefinition of federal and state regulatory roles, evolving and changing business relationships and a widening array of potential markets and services, all driven by steady advances in technology and national policy aimed at increased reliance on market forces, as opposed to regulation, to meet public policy objectives.

The purpose of this paper is to provide factual background useful for development of recommendations for changes in State telecommunications policy to advance State economic development objectives, without adversely affecting, and ideally enhancing, other policy objectives related to equitable public access to telecommunications services. To this end, the paper outlines the major provisions of the Telecommunications Act of 1996, current State telecommunications law and policy, Maine's current telecommunications rate structure and recent or ongoing telecommunications policy development efforts in Maine.

The State Planning Office will present policy recommendations, developed without input from industry stakeholders, decision makers and the public, in a separate paper.

III. CURRENT TELECOMMUNICATIONS POLICY AND LAW

The laws and policies governing the telecommunications industry are in the midst of fundamental change at both the national and state levels. These events are being driven by Congress' enactment of the "Telecommunications Act of 1996", PL 104-104 (Telecomm Act), signed into law by President Clinton in February 1996. This new law, a revision of the Federal Communications Act of 1934, calls for restructuring of the entire industry. The single largest implication of this sweeping legislation is the first major revision of the Communications Act in over 60 years: the removal of barriers to competition on all levels in the telecommunications industry. Subject to certain qualifications under the Act, local telephone companies, long distance telephone companies, cable television companies, electrical utilities and others can now enter one another's formerly protected markets. The Federal Communications Commission (FCC) administers the Federal Communications Act.

The Telecomm Act leaves implementation and clarification of many key issues, such as interconnection and access fees and Universal Service requirements, to rulemaking by the FCC and actions by each State's Public Utilities Commission (PUC) or equivalent regulatory agency. It is vital to note that the ground rules for deregulation developed by the FCC, particularly those related to local competition, access to local exchange carriers' (LECs) network infrastructure and Universal Service, are directly related to issues, such as intrastate long distance calling rates, that we have tentatively identified as central to our economic development agenda.

Section A summarizes the new federal law framework, noting provisions in the Telecomm Act and key FCC rulemakings and references the role of the PUC under the Telecomm

Act, including the ongoing debate over the legitimacy of FCC involvement in rate setting and related issues previously left to the states. The summary provided here focuses, as does the Act, on the telephone industry. In addition, only the most significant sections of the Act are discussed; the Act itself should be consulted as specific issues are considered.

Section B summarizes Maine's telecommunications law and policies.

A. Federal Law

1. Major provisions in the Telecomm Act

The main policy aim evident throughout the Telecomm Act is to foster competition in each of the telecommunications markets (principally traditional local and long-distance telephone service, cellular phone service, cable television, and related manufacturing industries) in order to lower consumer prices, increase consumer choices and spur technological innovation and private investment in infrastructure.

The Act also seeks to redefine "Universal Service" the type of "telephone service" that all should be able to afford in keeping with advances in information resources for example, the Internet, available to the general public. The goal of Universal Service has long been present in both national and Maine telecommunications policy, related both to the economic and social aspects of these policies. Seeking to make telephone service available and affordable to every household, no matter where it's located, the goal serves public safety and equity objectives. By expanding the number of persons reachable through the phone network, Universal Service also increases the network's overall economic value.

The Act's principal means of promoting competition involves removal of regulatory barriers to competition in local telephone markets previously monopolized for the most part by Regional Bell Operating Companies (RBOCs).¹

It is important to note that the Telecomm Act includes a number of provisions that differentiate the treatment of rural telephone companies from other carriers. In most cases, this paper focuses on the Telecomm Act as it impacts RBOCs as opposed to rural telephone companies as defined by 47 U.S.C. section 153 (47) (section 3 of the Telecomm Act). In general, the Telecomm Act insulates the rural telephone companies from the immediate impact of a number of requirements that promote competition.

¹ RBOC's are the fragments of the former AT&T following its federal court ordered dismantling in the early 1980's due to antitrust activities. In Maine, the RBOC is NYNEX, whose merger with Bell Atlantic is currently in progress.

a. Competition

The TelecommAct's key provisions regarding local competition Sections 251, 252, and 253² -

- mandate that the RBOCs allow interconnection and unbundled access to their networks as a means to ensuring competition and take a number of specified actions³ a 14 point "competitive checklist" subject to PUC comment and FCC review and approval attached to this document) intended to ensure local competition before they can enter the interstate market within their LATA
- set procedures to ensure that negotiation and arbitration of agreements regarding interconnection are fair and resolved within a set time frame;
- require that LEC's charges for interconnection and network elements "are based on the cost (determined without reference to a rate-of-return or other rate-based proceeding) of providing the interconnection or network element; and
- forbid and preempt state or local laws that function as barriers to competition in telecommunications markets.

"Rural telephone companies" are exempt from the Act's interconnection and related requirements absent a bona fide request for interconnection. Maine's independent telephone companies appear to meet this definition; Maine's largest carrier, NYNEX, does not. In addition, there must be a state PUC finding that such a request is not unduly economically burdensome, is technically feasible and is consistent with the universal service goals of the TelecommAct.

Most of the significant implementation details under the Act are left to rulemaking by the FCC. See section 2, below.

Under the TelecommAct, NYNEX and other incumbent LECs in Maine are required to open their LATA (Local Access and Transport Area, in Maine's case this means intrastate) toll service

² Section references are to the Communications Act, as amended by PL 104-104, the 1996 TelecommAct, unless otherwise noted.

³ This means that competitors need only purchase access to or interconnect with certain network elements or functions, e.g., switching, rather than pay a charge which reflects the costs of all elements and functions of the LEC's network.

markets to competition. It is generally understood that a rate decrease in intrastate toll rates would be beneficial to small business that cannot negotiate more favorable rates as many larger businesses can. There is a widespread belief that Maine ensures its low basic service (local area calling) costs by allowing NYNEX to charge a higher rate for intrastate long distance services to some classes of customers

b. Universal Service

Section 254 is aimed at redefinition and expansion of the concept of "Universal Service", the idea that all Americans are entitled to affordable, even free access to basic telecommunications services. The Act envisions a system of expanded federal financial support for Universal Service. It is unclear at this time both what telecommunications features the FCC will include within the Universal Service concept and how Universal Service will be funded. As with the competition goal, key implementation issues are left to the Federal-State Joint Board and the FCC.

Section 254 makes provision for urban and rural telecommunications services comparable in terms of both quality and price as a statutory goal. There is special allowance for discounted service for schools and libraries. States and the FCC are encouraged to further deployment of advanced telecommunications services to serve these institutions. Section 254 also encourages development of telemedicine through provision for discounted rates.

c. Manufacturing

A third aspect of the Act that Maine may seek to take advantage of is the provision allowing the RBOC's to enter the field of telecommunications equipment manufacturing. In order to enter into manufacturing the RBOC's must establish separate affiliates and ensure that their application to provide interLATA service has been approved by the FCC. The FCC may only approve this application, allowing entry into the long distance market, if an LEC has previously complied with the Act's measures designed to bring about local competition.

2. FCC rulemaking particularly significant to Maine

As explained in its implementation schedule for rulemaking required to implement the Telecomm Act, the FCC is acting in an expedited manner

Two rulemakings to implement the Telecomm Act appear particularly significant to our economic development mission: FCC Docket No. 96-98 (Currently under a stay from the US Eighth Circuit Court of Appeals regarding creation of conditions to encourage local competition and FCC Docket No. 96-45, regarding Universal Service. From a Maine perspective, these rulemakings are closely intertwined. In Maine, there is at least the perception that the State's intrastate toll rates (among the highest in the nation for low volume use) subsidize the State's commitments regarding service to outlying, sparsely populated rural areas. Increases in the charges for basic, local service (dial tone and local calling) has been and likely remains a hot button issue. Another possible area of concern is the distribution of toll revenues among the Maine telephone companies.

Our review of professional assessments of the emerging telecommunications competitive market suggests that rate increases in rural areas of Maine and comparable places across the country and a lowering of rates in more commercially attractive areas may be consequences of increased competition. Rural areas may also lag behind urban centers in the deployment of new technologies.

a. Local competition

This is perhaps the most significant implementation action for Maine that the FCC is undertaking. This rulemaking FCC Docket #96-98, implements provisions in the Act regarding steps incumbent LECs, e.g., NYNEX, must take to allow others access to their network, rates for competitors' connection to those networks, and other key issues regarding competition.

The FCC issued a unanimous Local Competition Order on August 1, 1996. Given the complexity of the issues and the money at stake, legal challenge that could delay the rules' implementation is likely. (NOTE -- As of 11/5, SBC had obtained a stay of number of key provisions the U.S. 8th Circuit Court of Appeals. This stay was recently upheld by Justice Thomas of the U.S. Supreme Court. Arguments in the 8th Circuit are scheduled for February.)

The FCC's approach to the local competition issue looks to establishment of a uniform, pro-competition national framework with explicit rules on issues that are deemed most critical to successful development of competition nationwide and with measures to facilitate rapid development nationwide of advanced

telecommunications and information technologies. The FCC's approach seeks to minimize variations among the states as a means to ensure swift and full implementation of Congress' policies in the Telecomm Act.

The FCC issued its local competition order as this document goes to press. A detailed analysis of the new local competition rule and its potential significance to Maine is unavailable at this time. Some of the major provisions of the Order include

- Offering an interconnection pricing methodology as well as several default ranges for states that choose not to employ the methodology,
- providing for several methods of and points for interconnection; and,
- creating a wholesale pricing scheme for local service resale.

b. Universal Service

FCC Docket # 96-45 addresses the major implementation issues under the Section 254 of the Telecomm Act, the Universal Service section. The FCC issued its Notice of Proposed Rulemaking in March of 1996. The formal comment period for this docket closed in May 1996 and the Joint Board will issue its recommendations in November of 1996 (http://www.fcc.gov/Bureaus/Common_Carrier/Reports/decision.html). The FCC plans to finalize orders on the Universal Service docket in the Spring of 1997. The Notice states that:

"This Notice reflects our newly articulated statutory obligation to ensure that the definition of services supported by universal service support mechanisms and those mechanisms themselves evolve as advances in telecommunications and information technologies continue to present consumers with an ever increasing array of telecommunications and information service's

In addition to the scope of telecommunications services to be made universally available, the rulemaking addresses three other major issue areas:

- provision of comparable urban and rural services,
- provision of subsidized advanced telecommunications to qualifying schools libraries, and health care facilities, and,
- allocation of costs.

i. Urban/rural service

The FCC states in its proposed implementation schedule that it intends to adopt rules to require that rates charged by providers of interstate telecommunications services to subscribers in rural and high cost areas shall be no higher than the rates charged by such provider to subscribers in urban areas. The FCC has indicated that the rules will require a provider of interstate interstate telecommunications services to provide such services to its subscribers in each state at rates no higher than the rates charged to its subscribers in any state. A number of commentators question how this policy objective meshes with others in the Act, including the requirement that interconnection charges be based on going forward economic costs and related measures designed to bring about competition.

ii. Advanced services to schools, libraries, and health providers

In its rulemaking schedule the FCC indicates its intention to "establish competitively neutral rules to enhance, to the extent technically feasible and economically reasonable, access to advanced telecommunications and information services for all public and nonprofit elementary and secondary school classrooms, health care providers, and libraries; and to define the circumstances under which a telecommunications carrier may be required to connect its network to such public institutional telecommunications users."

iii. Cost allocation

Finally the FCC intends to "establish necessary cost allocation rules, accounting safeguards, and guidelines to ensure that services included in definition of universal service bear no more than reasonable share of joint and common costs of facilities used to provide services." The FCC plans to finalize rulemaking on this issue in the Spring of 1997.

c. Access charges

In approving its new interconnection rules, the FCC indicated its intent to review and revise rules regarding access charges. An

access charge is the fee that an interexchange carrier must pay to gain access to an LEC's network. The FCC intends to undertake this revision in tandem with the Universal Service rulemaking, recognizing the relationship between the two topics. Revenues derived from access charges can account for over 25% of the revenues of many RBOCs, and likewise account for a large cost on the part of the long-distance companies. The methodology set in this rulemaking will have major implications on the cost of long-distance service and the nature of competition in the interexchange market.

3. PUCs' role under the Telecomm Act

a. Overview of state responsibilities

Although the Telecomm Act certainly redirects and arguably reduces the role of state regulatory agencies in regulating intrastate phone service, the Act leaves substantial implementation responsibilities to the states. Maine PUC staff has developed a list and timetable for implementation of the agency's varied duties under the Act.

Major PUC responsibilities include the duties to arbitrate the need arises, negotiations between incumbent and competing LECs regarding interconnection, and to comment on NYNEX's compliance with the 14 point "competitive checklist" referenced above. Section 253 also saves to the states the authority to impose competitively neutral state law requirements necessary with regard to consumer protection, universal service, public safety and welfare and service quality.

In June 1996, the Maine PUC (Docket No. 94-114) outlined the administrative procedures it will use in fulfilling its duties regarding mediation and arbitration of interconnection negotiations. Because interconnection rates are a key to ensuring local competition among telecommunications providers, this PUC proceeding may bear directly on achievement of Maine's economic development objectives.

Note - Maine PUC has opened a new docket for the AT&T arbitration with NYNEX. Given the stay of portions of the FCC's interconnection rule, it is unclear what method the Maine PUC will employ to "establish any rates for interconnection services or network elements" as required under section 252 (c) of the Telecomm Act. Section 252 (d) provides that these rates cannot be

determined with reference to a rate of return or other rate based proceeding.

b. FCC/State relationship

Although states have historically regulated local and interstate telephone service, the Telecomm Act and the FCC's proposed implementation of it involve a significant increase in the federal role. Commenting on the FCC's proposed local competition rule, the Maine PUC joined other rural states in opposing what they depicted as the FCC's intrusion into matters properly left to the states. The Maine PUC's joint filing made the following major points to justify its position that the FCC should establish only "guidelines" for creation of competitive conditions and leave much of the actual decision making to the states

- national pricing policies would prove unworkable due to the significant differences in cost structures in LECs across the country;
- states need the flexibility to require "unbundling" that is suited to unique local conditions affecting deployment of telecommunications technology;
- rural states have made reasonable progress in fostering local competition without federal requirements dictating how to do so, although the lack of companies willing to compete has been a limiting factor;
- national standards, blind to "state specific technological, geographic or demographic variations in local markets", "could have devastating 'cream skimming' or 'cherry picking' implications in states like Maine where the monthly cost of a loop may vary from under \$5 to over \$200 a month and where switching and transport costs could vary between areas by factors as great as ten to one."

This filing suggested that the Maine PUC considered fostering local competition by providing "incentives to bring competitive local service providers to the most rural areas of the State by providing competitive LECs with the amount of the subsidy in a rural area that is currently implicit in the incumbent's rates by virtue of company-wide averaging." One might expect that Maine PUC will use any flexibility granted under the FCC's Interconnection Rule to address State control issues raised in their initial filing to the FCC in the rulemaking proceeding.

c. Preemption

The Telecomm Act limits states' policy options regarding telecommunications. Section 253, provides that "no State or local statute or regulation, or other State or local legal requirement, may prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service." 47 U.S.C. sec. 253 (a). On the other hand, the Act specifies that States may, in competitively neutral ways, "preserve and advance" universal service, protect the public welfare, safeguard consumer rights, and require publicly disclosed compensation for use of public rights of way. Section 253 preserves state and local governments' ability to allow the use of public ways or rights of way (ROW) in "a competitively neutral and nondiscriminatory manner provided fees/charges are made public. One can expect significant disputes over the authority of states to act in some areas as implementation proceeds.

The extent of the FCC's preemptive authority is currently under debate in the FCC rulemaking referenced above. For this reason, our policy development efforts should be based on awareness and understanding of, if not efforts to influence, events at the federal level.

Several specific provisions in the Act may limit affect state or local control of cable and wireless services.

i. Wireless communications

The Act preempts state and local land use controls that expressly or effectively ban siting of wireless communications towers. Sec. 704 provides that State and local governments cannot discriminate among "personal wireless service providers" in making siting decisions, cannot enforce laws that prohibit or have the effect of prohibiting these services, must act on application in a "reasonable period of time", and provide a written decision based on substantial evidence. Review of the decision may be heard in federal or state court; courts are directed to rule on an expedited basis.

A recent federal court decision Sprint Spectrum v. City of Medina, No. C96-408WD (May 3, 1996) (Order on motion for Preliminary Judgment) upheld the City's moratorium, enacted after passage of the Telecomm Act, on decisions on applications for siting of cellular transmission towers. The fact that the local ordinance provided for a moratorium on permit issuance (the permits at issue were in fact processed) rather than a ban was significant to the court.

The FCC has published information that clarifies that states and municipalities may still regulate and zone to affect the location of these towers. At the local level in Maine, cell tower siting has also been controversial at times.

ii. Cable services

Section 303 of the Telecomm Act (47 U.S.C. 541(b)) limits a municipality's ability, using franchise agreements, to control cable operators' provision of telecommunications services. This provision forbids a franchise authority from

- * requiring a cable operator or affiliate to acquire a franchise in order to provide telecommunications services;
- * requiring a cable operator to discontinue cable operations if it provides telecommunication services or requiring a cable operator to provide certain telecommunications services or facilities other than "institutional networks" (defined as networks generally available only to nonresidential subscribers); or
- * effectively prohibiting, limiting, restricting or conditioning a cable operator's provision of telecommunications services.

Language elsewhere in the Act (Section 253) reserving to municipalities the rights to manage and receive fair and reasonable compensation from telecommunications providers for use of public rights of way may give rise to arguments regarding the scope of municipal franchise authority over cable operators seeking to expand into markets such as local telephone service. One provision under the Telecomm Act allows localities to expand their traditional bargaining base in establishing franchise agreements to the extent that cable providers may be required to create a network for the use of public, institutional users (Institutional Networks).

The State's current franchise system, see 30-A M.R.S.A. sec. 3008, allows localities to charge cable companies for the use of their rights-of-way. This law contemplates municipal action "to displace competition with regulation in the area of cable television." 30-A M.R.S.A. sec. 3008, subsec. 1, para. B. The law also allows municipalities to grant a cable operator an exclusive franchise for a 15 year period. 30-A M.R.S.A. section 3008, subsec. 5. Public utilities, whose rights of way cable operators may use to provide service, are expressly exempt from this section's contracting

requirements. Id. Cable franchises must now be non-exclusive under federal law.

B. State Law

1. State telecommunications policies

Maine law provides that the following are the State's telecommunications policies:

- "telephone service must continue to be universally available, especially to the poor, at reasonable rates" (35-A MRSA sec. 7101, subsec. 1);
- "it is the goal of the State that all Maine's businesses and citizens should have affordable access to an integrated telecommunication infrastructure capable of providing voice, data and image based services" (35-A MRSA sec. 7101, subsec. 2);
- "[t]he State shall consider policies that "encourage economic development", regulate in a manner that promotes development and use of new technologies, and "encourage acceptable service applications" that foster economic development and the public welfare" (PL 1995 c. 631, para. A - C); and
- "it is the policy of the State that affordable access to those information services that require a computer and rely on the use of the telecommunications network should be made available in all communities of the State without regard to geographic location" (PL 1995 c. 631, 35-A MRSA sec. 7101, subsec. 4).

These "policies" are akin to legislative findings and serve primarily as guides to implementation by PUC and other state agencies. PL 1995 c. 631, which is discussed separately below, is an exception in that it provides for significant, specified implementation measures. As noted above, state telecommunication laws and rules are subject to federal preemption under the Telecomm Act.

Also noteworthy is 35-A MRSA sec. 7101-A that creates a "right to privacy" for telephone subscribers that, at a minimum, entitles subscribers to limit dissemination of their phone numbers.

2. Rates

The Maine PUC has been responsible for setting intrastate rates both for customers' use of and service providers' access and interconnection to

Maine's telecommunications network. As noted above, the FCC will be assuming a significant role regarding establishment of intrastate rates, although the extent of that role is as yet undetermined, pending completion of the FCC rulemaking noted above, and any subsequent appeals and modifications. Maine's telecommunications rates are discussed in Part IV, below.

Maine has set several rate requirements by statute. First, state law requires that hearing and speech impaired persons receive a 70% discount on intrastate toll rates. 35-A MRSA sec. 7302, subsec. 1. In general, Maine's telecommunications laws show some awareness of the needs of those whose disabilities require special equipment. Second, mandatory local measured service (billing telephone subscribers based on time and duration of local calls they make) is prohibited and the Maine PUC must "preserve traditional flat rate telephone service at as low a cost as possible, allowing for unlimited local exchange calling for a single monthly fee as the standard phone service. . . ." 35-A MRSA sec. 7303.

It bears reiterating that specific elements such as the incumbent's "revenue requirement", policies and assumptions underlying the Maine PUC's rate making actions must comport with the Telecomm Act and any FCC rules implementing the Act.

3. Universal Service

As the aforementioned state policies indicate, universal service is a central theme of the State's approach to telecommunications issues. Local exchange carriers are, in fact, required to conduct outreach to increase low-income persons' use of available universal service program. 35-A MRSA sec. 7104. The federal government currently subsidizes universal service to qualifying low income and rural persons.

4. Public access to electronic information resources (LD 828, PL 1995 c. 631)

This recent state law identifies several means to achievement of its policy aim: providing affordable access to on-line information through Maine schools and libraries to all Maine communities. Most notably, the Maine PUC "may" require intrastate telecommunications carriers with 100,000 or more lines (currently, only NYNEX) to spend or forego up to 1.5 % of its intrastate revenues on measures to ensure qualifying libraries' and schools' access to computer network information (presumably Internet access). Currently, only NYNEX meets this definition. The law also provides that any amount collected to this end will offset the amount otherwise owed

under any intrastate Universal Service mechanism the PUC may develop. The PUC's authority to take these actions is repealed February 1, 2001.

The law also retroactively authorizes the PUC to require NYNEX (or any telecommunications carrier exceeding 100,000 access lines in Maine prior to 1997) to allocate \$4 million in each of the next 5 years to a fund that the PUC will administer to help offset school and library costs associated with the access NYNEX is providing.

5. Land use

Installation of utility lines and tower sitings in Maine is regulated by the State environmental and land use laws as well as local ordinances. Applicability of these laws depends on the size and location of the project. In the organized areas of the State, projects involving routine placement of individual cables, utility lines and comparable infrastructure are often eligible for the Maine Department of Environmental Protection's (DEP) permit by rule program. (ME DEP Rules ch. 306.) Larger projects, or projects potentially affecting resource areas of particular concern, may be subject to regulation under the Site Location of Development Act and require an individual NRPA permit. Local ordinances, under the State's Shoreland Zoning Act and the National Flood Insurance Program as well as zoning and other local controls, are also applicable.

In the unorganized territories, the Land Use Regulation Commission (LURC) land use standards, implementing the agency's comprehensive plan, govern siting of telecommunications infrastructure, such as installation of towers and fiber optics cable. LURC's standards are designed to direct development to appropriate areas and in general protect ecologically sensitive and aesthetically valuable resources. State law provides for cooperation of DEP and LURC in permitting projects in LURC territory.

6. Taxation

Businesses providing telecommunications services in Maine are subject to sales and income taxes and taxes on real and personal property. Telephone, cable, wireless, and other telecommunications services are each taxed somewhat differently under current state law. This section provides a brief outline of some of the main features of the State's tax policy as it applies to telecommunications businesses.

In general, the State taxes two-way, interactive telecommunications property and activities differently than other communications. Certain paging services and direct broadcast television are examples of

telecommunications businesses that sell non-interactive services and thus are not subject to the telecommunications tax. Businesses engaged in interactive telecommunications are subject to the State Telecommunications Personal Property Tax" on equipment used for two-way, interactive communications. In the case of a cellular tower, for example, an antenna on the tower used to send and receive signals would be subject to the tax whereas the tower itself would not be. This tax generated about \$28.5 million in FY 1995.

Towers and other buildings and lands used by telecommunications businesses are subject to local property taxes. As noted above, cable operators pay a municipal franchise tax whereas others providing telecommunications services, such as basic telephone services, are exempt from franchising costs.

Maine's 6% sales tax applies to sale of intrastate (basic exchange and intrastate long distance) telephone services, as well as end user access charges.⁴ Interstate long distance calls are subject to federal tax. Sales tax applies to two-way interactive cellular telephone service in the same manner as plain old telephone service (POTS). By contrast, the sales tax does not apply to the access charges paid by an interstate long distance carrier, e.g., AT&T, to the local exchange carrier, e.g., NYNEX, for use of the latter's network to transmit and receive long distance calls. 36 MRSA section 1752, subsection 18-A (definition of "telephone or telegraph service".) This transaction was considered a retail sale, and subject to taxation, from 1984 to 1988. Id. Basic cable service, as its defined on a service area by service area basis, is not subject to sales tax although a sale of enhanced services is. 36 MRSA section 1752, subsection 17-A (definition of "taxable service")

Maine's telecommunications industry has changed dramatically since the adoption of a telecommunications personal property tax in 1987. What was once an industry of wire based carriers providing primarily voice transmission has been replaced by new technologies such as microwave transmission, cellular services and satellite data transmission. Today electronic commerce, including transactions occurring over the Internet, is considered routine. Cable television operators are planning to offer telephone service and phone companies are entering the cable business. Maine's tax code, however, has often failed to keep pace with technology.

Maine's tax code is currently under review in light of emerging laws and technologies, and will be an important aspect of Maine's economic development policy.

⁴ This end user charge is an amount paid to a local exchange carrier to enable the caller to make interstate long distance phone calls.

7. Pole Attachments

Pole attachment concerns the ability of a cable operator or other telecommunications carrier to use, for a reasonable fee, existing telephone or utility poles to string the lines needed to provide its service. Maine is one of 19 states "exempt" from the FCC's jurisdiction over pole attachment. Federal law allows for this exemption where the States certify it has a specific legal means to resolve potential disputes regarding the right of and compensation for pole attachment. Under Maine law, the PUC is empowered to resolve these disputes and develop equitable terms and conditions of attachment where private parties have failed to do so through negotiation. See 35-A MRSA sections 8302 and 711.

Pole attachment rates may become more significant as cable companies, electric utility holding companies, and telephone companies increasingly vie for the same markets. The issue of pole attachment prices as an economic barrier to competition is of concern to cable companies seeking to expand into new areas or markets through the use of poles owned by telephone or electric utilities. The cable industry suggests that although the national average rate for a solely owned pole is under \$5 per pole, Maine's statutory formula may yield a per pole price three or four times greater than that. Their previous pole attachment contract having expired, a number of cable companies that do business in Maine are reportedly currently negotiating new rates with NYNEX.

IV. TELECOMMUNICATION RATES AND CHARGES IN MAINE

A. Summary

The purpose of this section is to provide a summary of Maine's telecommunications rates for business and residential customers and access and interconnection charges for telecommunications carriers. The staff of the Maine Public Utilities Commission provided much of the quantitative information presented here. The numbers presented here are approximate and offered to help identify areas where more detailed analysis may be needed to assess the impacts on rates or interconnection charges of increased local competition or an expanded Universal Service concept.

⁵ Generally speaking, access rates refer to the wholesale rates paid by interexchange carriers of long distance service, e.g., AT&T for use of the LECs network to originate, transmit, or terminate calls. Interconnection rates, yet to be developed in Maine, refer to the rates competitors must pay the LECs to provide local exchange calling services. There are also intrastate access charges under chapter 280.

The following are the major preliminary findings regarding Maine's telecommunications rates and charges discussed in more detail in the sections that follow:

1. Universal service

- The average loop cost for telephone service in Maine is among the 10 highest in the country: \$337.46 as compared with a national average cost of \$248.29, based on 1994 data. The average price for basic telephone service, however, only covers approximately one third of the loop cost.
- As noted above, the Maine PUC has joined other rural states' regulators in formal rulemaking comments to the FCC urging a substantial increase in the Universal Service funding. If this view prevails, the increase could result in rate relief for retail users by furnishing funds to pay for embedded network costs, a portion of which were incurred to ensure Universal Service.

2. Service rates for intrastate long distance

- Maine has a range of available retail rates. The rate available to a given customer is largely a function of the volume of minutes the customer uses although heavily discounted calling plans are available only by subscription. The deepest discounts are available for residential and business rates only through accepting restricted calling hours or entering multi-year minimum charge contracts, respectively
- The rates for Maine's largest business consumers, of which there are about 50 to 100, are among the lowest in the nation;
- The rates available for the great majority of Maine businesses (small and medium users of telecommunications services) are well above the national average;
- Maine's residential rates for intrastate long distance are well below the national average for high volume users and well above the national average for small volume users and
- There is a lack of readily accessible public information needed to determine precisely the number and geographic distribution of customers paying each of the several available rates.

3. Interexchange access charges

- Maine's access rates are higher than the national average. The national average access charge is approximately 9 cents/minute. In Maine, the

⁶ The terms "large" and "small" and the like are used in this section for both business and residential customers to refer to their relative monthly volume of calls.

access charge ranges from 12 to 32 cents depending on the volume of use (number of minutes) by the ultimate retail customer.

4. Interconnection charges

- Under the Telecomm Act, incumbent LECs and potential competitors may through negotiation, mediation, or arbitration, arrive at interconnection rates for local exchange service, previously a monopolized business. A PUC must approve these agreements. The FCC has review and approval authority in the event the state PUC fails to act in a timely manner as provided by the Telecomm Act. AT&T is currently negotiating with NYNEX regarding interconnection in Maine, as well as the other New England states and has filed for arbitration on interconnection rates in Maine with the PUC. About twenty other providers are also negotiating with NYNEX. -Note- Maine PUC has now completed NYNEX/AT&T arbitration.

B. Maine's Approach to Establishment of Telecommunications Rates

In common with other states, Maine's telecommunications rates reflect policy choices and priorities, some of which are statutory and some of which are determined by the Maine PUC implementing legislative priorities or delegated authority. This section outlines the major policy considerations that account for our current rate structure. It is important to emphasize again that the Telecomm Act and the FCC's rulemaking regarding interconnection, local competition, access charges and Universal Service may necessitate fundamental changes in Maine's approach to setting retail customer rates and wholesale charges.

Maine has historically taken a "cost plus" approach to setting rates for telecommunications services. This means that in the course of a formal rate making procedure, the PUC examined and evaluated a telecommunications carrier's variable and fixed costs of service, determined the total "revenue requirement"⁷, and developed a schedule of prices (tariffs) that the carrier may charge for services, and in this way assign costs among different categories of services and customers.

In 1995, the Maine PUC adopted a "price cap" approach to setting rates for NYNEX's "core services", such as basic exchange and toll services, for the next 5 years. See MEPUC Order # 94- 123 (Re: Regulatory Alternatives for NET). Under this price cap approach, investors assume additional risk and enjoy

⁷ The "revenue requirement" is basically the amount of revenue needed to cover PUC approved costs and a return on investment (about 10%) related to the cost of capital to the carrier.

⁸ In Maine, NYNEX has made \$203 million of the \$241 million in private (nonpublic sector) investment in telecommunications plant. NYNEX enjoys about 90 to 95% of the intrastate long distance market.

additional opportunities for rewards compared with the previous rate making approach. This price cap approach decouples rate making for individual network elements from changes in the company's costs.

Maine's current rate structure for intrastate toll service has been based on the concept that customers with the most elastic and largest demand pay the lowest rates and those with limited and inelastic demand pay the highest rates. The length of a call, the distance between parties to a call, the time of the call, and the caller's monthly volume of usage are the primary factors that determine the price a Maine customer pays for intrastate long distance telephone calls.

Rates for local calling are priced on a flat basis and are held, by law, to the lowest cost as is possible.

Consideration of the caller's volume of usage points to a fundamental feature of the rate design. Maine rates are set in a manner that discourages high volume customers (telecommunications intensive businesses) from leaving the EC's network, i.e., the rates are meant to ensure that it is less expensive to pay NYNEX or another local carrier than build one's own system. In addition, if these rates are not low enough, NYNEX can negotiate with the customer on an individual basis. However, some maintain this approach may inhibit competition.

Embedded cost has been a significant consideration in setting telecommunications rates and interconnection charges. The manner in which these investments may be considered in establishing rates pursuant to the Telecomm Act is currently a hotly debated issue. For much of the latter half of this century, Maine used "net book value" (original cost less depreciation), as opposed to fair value, to determine the depreciation and present value of network investments for rate setting purposes. Maine used net book value to figure depreciation during the 1970's when much of today's strandable investment was being made. According to PUC staff, Maine moved to original cost depreciation (basing the present value of telephone plant on the original amount paid as opposed to an annual assessment of the fair value of that plant) in the 1950's in response to consumer complaints that the fair value approach over valued these assets and thus was leading to higher rates. Ironically, due to the pace of technological development, the reverse may be true today: the interests of small to medium business and consumers would likely be better served by a "fair value" approach. Some may argue, however, that making this change now could give rise to regulatory takings issues, as applied to plant currently installed.

C. Potentially Stranded Investment

Maine's telephone utility law grants "a reasonable opportunity to earn a fair return on the investment necessary to provide telephone service" 35-A MRSA section 9103, subsection 6. Implementing this statutory provision (the

"alternative form of regulation" or AFOR), the Maine PUC capped NYNEX's rates subject to inflation. How this cap will affect future NYNEX infrastructure investment is not yet clear, but if NYNEX's costly 1970's and 1980's investment were paid for, the company would be left with a lower cost infrastructure for the provision of basic service. The extent to which NYNEX may recover its investment through wholesale interconnection and access rates, will likely be debated in proceedings before the Maine PUC. Some maintain that if Total Element Long Run Incremental Cost (TELRIC) is used to develop access and interconnection rates, certain investments in infrastructure, for which this paper uses the term "potentially strandalone investment," may prove unrecoverable.

The strandalone investment⁹ issue arises because telecommunications is an industry for which costs are in decline. The forward looking unit costs to add capacity to serve increases in demand are significantly lower today than in the past, due to technological advances. For example, changes in fiber optics and related digital multiplexing equipment have made the per unit costs of adding transmission capacity much lower than under the prior analog, copper technology.

Declining costs, coupled with the simultaneous opening of much of the arena to competition, may place Maine telephone companies in an awkward situation. If Maine's present public switched network were rebuilt "from scratch" using today's technology, it would cost but a fraction of the network's original cost. The difference between the net book cost of the network and the replacement cost of the network is a measure of the potentially strandalone investment. This difference, if it exists, poses a fundamental policy question: who must pay this difference?

As they approach this issue, policy makers are likely to be presented with two divergent views on the nature and significance of the potentially strandalone investment issue. According to one school of thought, the notion of "stranded

⁹ The stranded investment, or rate base overhang, issue facing the electric utility industry is in many ways different than that faced in the telephone industry. First, in terms of magnitude, the issue facing electric companies appears much larger: the stranded investment for some companies may be as much as three or four times the total equity in the company. Second, contracts with "non-utility generators" (NUGs) account for much of the stranded investment problem, at least in Maine. There is no equivalent in the telecommunications arena. Third, virtually all of the stranded investment for electric companies relates to generation, as opposed to transmission and delivery, facilities. There is simply no parallel in telecommunications; telecommunications infrastructure is by its nature much more comparable to transmission and delivery systems. Lastly, Wall Street's assessment of the future for electric utilities companies in general appears far more bleak than for RBOCs. Bond rating agencies have warned buyers away from electric utility bonds due to the risks and uncertainties posed by the strandalone investment issue, and stock prices for many utilities have plummeted.

investment", in the telecommunications context, is an unproven and theoretical notion. The reasoning underlying this point of view rests on the following points:

- competition will not result in a significant amount of existing plant becoming unused and useless, i.e., incapable of generating a fair return on investment, but plant will remain useful for wholesale as well as retail purposes;
- in some instances, the reproduction cost of a telephone company's network may actually exceed the historic costs now on the books;
- competition may result in a net gain of customers for incumbent local exchange carriers rather than a loss of customers, and entry into new markets, such as interexchange long distance, as allowed by the Telecomm Act will provide new revenue sources to offset any losses related to embedded cost recovery.

The other school of thought on the stranded investment issue, that there is in fact a real issue here and that telephone companies are entitled to full recovery of network investments, rests on the following points:

- state and federal Universal Service and other telecommunications policies required local exchange carriers, as carrier of last resort, to make certain network investments and to provide service or a certain level of quality. Denial of full recovery of investment made to satisfy these requirements would be a regulatory "taking";
- those who use the local loop and other network elements owned by local exchange carriers, for example to terminate or initiate long distance calls, should in fairness be obligated to pay for the embedded costs of the network. Rates for interconnection or access that did not allow for recovery of these investments would provide an unfair and artificial competitive advantage that would undermine local carriers' financial ability to provide quality service;
- competition, fostered by interconnection or access rates that fail to account fairly for embedded costs, would result in significant amounts of spare plant that lacks economically viable uses.

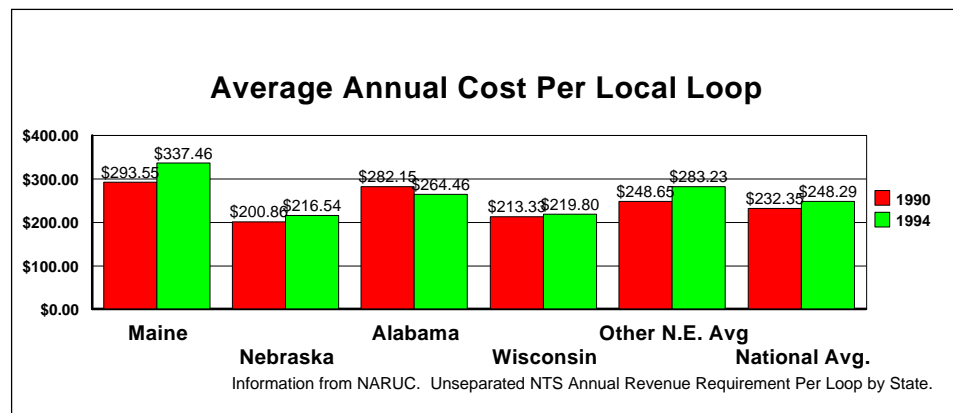
Wall Street's generally optimistic assessment of the financial outlook for RBOCs, and the performance of their stocks, provides one measure of the degree of risk that the RBOCs face as competition emerges.

D. Basic Service: Local Calling and Universal Service

As noted above, Maine law makes low cost, flat rate basic telephone service a high priority. (35-AMRSA sec. 7303.)¹⁰ The size of local calling areas and the number of parties one can reach with a local, non-toll call, varies widely across the State. Some local exchanges are limited to one or two communities. NYNEX's rates for local service in Maine range from about \$9 to \$1 per month.¹¹

According to information compiled by the FCC's Joint Board, in Maine in 1994 the statewide average fixed cost per loop¹² (non-traffic sensitive revenue requirement) was \$337.46 per year, or about \$28.12 per month. The national average was \$248.29, or about \$20.70 per month. Thus, Maine's average per loop costs are about 33% higher than the unadjusted national average. (See footnote 3 above and figure 1 below)

Figure 1



Loop costs in Maine range from well below \$100 per year to well over \$500. The amounts vary directly with population density, distance from urbanized centers, and geography. For example, the cost to serve island communities and long peninsulas can be extremely high.

The average loop costs in Maine steadily increased from \$293.55 in 1990. Not all states exhibit the same trend; in some, this cost declined.

¹⁰ 35-A MRSA sec. 7303, which precludes mandatory "local measured service" (basing the cost of local calling on the volume of calls made, as is the case with long distance), is citizen initiated legislation enacted by statewide referendum vote.

¹¹ Many independent phone companies have adopted NYNEX's toll rates as their own, following the PUC's 1994 local calling area rule, and receive revenue for an imputed share of NYNEX's toll revenues.

¹² The local loop is the wire (usually copper twisted pair) that runs from the customer to the central office where switches route the call to its destination

As these figures suggest, basic telephone service in the more rural areas of Maine is "subsidized", in the lay if not strict economic sense of that term, by the rates in more urban areas and to some extent toll rates. Actual costs of services are significantly lower in more densely populated areas.

With a statewide average basic service charge of about \$10 (\$120 of annual revenue), nearly two thirds of the statewide average loop cost of \$28.12 per month (\$337.46 per year) must be recovered from sources other than charges for local service. Part of this recovery is in the form of "high-cost assistance" from the Universal Service Fund (USF), funded by intrastate charges on interexchange (long distance) carriers, such as MCI, and administered by the FCC to further national universal service objectives. Maine is to receive \$7,333,716 in USF payments in 1996. NYNEX, which serves 600,906 loops, is to receive \$3,212,233 (about \$5.36 annually per loop). Maine's next largest recipient of the USF subsidy is Maine Telecommunications Group, Inc. (made up of five local telephone companies formerly owned by GTE) serving 49,074 loops. Maine Telecommunications Group, Inc. will receive \$2,121,431 (about \$43.23 per loop).

The Universal Service rulemaking now pending at FCC may significantly affect the types of services local carriers are obligated to provide as well as the federal contribution. An increase in federal Universal Service fund support is one option under consideration as the FCC reconsiders the level Universal Service. In Universal Service proceedings now before the FCC, Maine PUC maintains that the Telecomm Act's requirements of "just, reasonable, and affordable rates", and of comparable rates and services in urban and rural areas support the argument that significant increases in the level of funding for Universal Service are needed to meet the purposes of the 1996 Act.

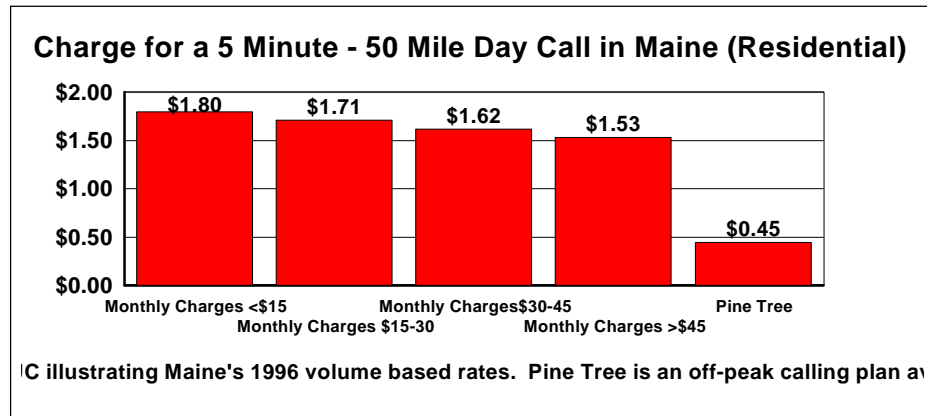
E. Intrastate Long Distance

This section outlines the range of intrastate long distance rates paid by Maine business and residential customers, and compares these rates with those in other states. Although it might prove useful in evaluating policy options to enhance local competition, information concerning the number, geographical distribution, and revenue generated from customers in each rate category (business and residential) is likely to be proprietary. The Maine PUC does have information that shows the number of minutes charged for each category. Also, some customers negotiate more favorable rates than those referenced here. Some of those contracts are proprietary.

1. Residential Rates

Figure 2 shows the range of rates paid by Maine residential customers. The dollar amounts on the X-axis depict the customer's monthly intrastate long-distance bill

Figure 2



The intrastate long distance rates¹³ paid by Maine residential customers range from 9 to 62 cents per minute¹⁴. There are several possible residential rates under the NYNEX tariff and through available calling plans. The volume of minutes a customer uses is a key factor in determining the rate for which the customer is eligible. The initial \$10.85 flat charge for the first two hours and the subsequent 9 cents per minute rate thereafter is advantageous¹⁵ to customers who make more than approximately \$10/month (about 1/2 hour) of intrastate long distance calls per month. The range of rates on the higher cost end is a function primarily of the costs embedded in the network being used.

Although the PUC does not have precise figures on the average number of long distance calls Maine customers make or the distribution of customers among the several rate options, the following characterization put forth by PUC staff may be useful:

- A significant portion of Maine customers make no tolls calls each month.

¹³ The rates discussed here are those authorized for NYNEX, which provides local exchange to about 85% of Maine telephone customers. Independent phone companies serving predominantly rural areas have generally identical rates. Attachment 1 is a map showing the service areas of Maine's local exchange carriers.

¹⁴ NYNEX's "Pine Tree State Service," available to the company's residential customers, costs \$10.85 per hour for the first two hours of service, plus 9 cents for each additional minute. Pine Tree Service discounts are available only for calls made during off-peak periods, times other than 9 AM to noon and 6 PM to 9 PM on week days.

¹⁵ A customer must request Pine Tree State Service from the customer's local carrier. A customer's rates do not automatically drop to the Pine Tree or other discount rates as calling volume increases. Maine's rates are thus implicitly declining block rates.

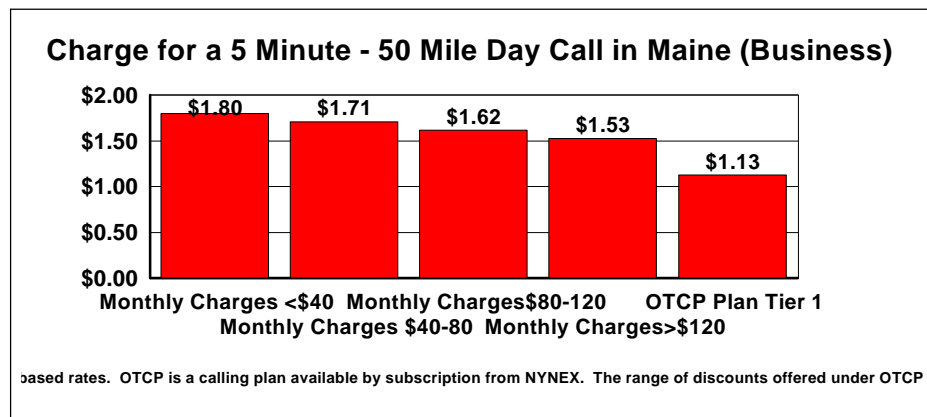
- Another sizable portion make few toll calls each month.
- Under Maine's rate structure, these low volume customers expend relatively few dollars each month for toll calling even though the per call rate they pay is high.

Chart 1 (attached at the end of this paper) adapted from information prepared by AT&T, provides a comparison of Maine's intrastate residential toll rates with those of other states. The table compares Maine's undiscounted rate schedule (54 cents for the initial minute and 33 cents a minute for the additional four minutes for a 5 minute, 50 mile daytime call) to the single rate schedule most other states use. Maine's lowest available residential rate, the 9 cents per minute Pine Tree Service, is also shown.

2. Business Rates

Figure 3 shows the range of rates paid by Maine businesses. The dollar amounts on the X-axis depict the monthly intrastate long distance bill of a sample business. There are deeper discounts available under the Outward Toll Calling Plan (OTCP), but this graph employs the lower tier to reflect small business usage.

Figure 3



Maine businesses are subject to a great variance of rates. For example, rates for businesses that are not party to a minimum one year contract with NYNEX are among the highest in the country. By signing contracts with NYNEX, businesses can significantly decrease those rates. The OTCP rate offered by NYNEX is based on a sliding scale involving the length of the contract (one to three years) and the volume of calls (businesses must guarantee a minimum of 2,400 intraLATA minutes per year to be eligible for the initial OTCP discount). The discounted Maine rates are still

somewhat high at the initial discounted rate, but any high volume business with a three year contract will receive a rate among the best in the country. As with non-business rates, calling volume and subscription plan are the key factors affecting the rates a business pays. A small business (in terms of telecommunications usage) pays the same rates as residential customers.

F. Access Rates

The access charges are the wholesale rates telecommunications carriers pay to LECs, in Maine primarily NYNEX, to carry their customers' calls over the LECs network. There are two types of access charges in Maine. The first is set by the FCC for interLATA services, and the second is set by the Maine PUC dealing with intraLATA services. FCC has announced that it will be revising the interLATA (e.g. AT&T and MCI) access rates by the Spring of 1997. At this time, it is not completely clear how and if this FCC action may affect PUC established intraLATA rates.

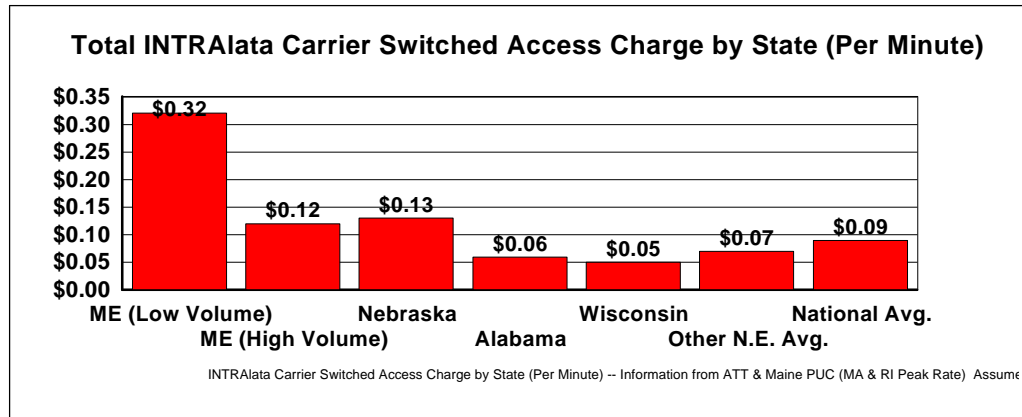
Access charges are estimated to equal as much as 75% of interexchange carriers' costs, and a correspondingly significant percentage of local exchange carriers' operating income. This charge may be a significant cost factor affecting a competitor's decision to enter, and ability to succeed, in Maine markets.

The complexity of the Maine PUC's scheme for assessing intraLATA access charges reflects the complexity of the network itself. In general, these cost elements can be broken down into three categories:

- non-traffic sensitive common line charges set at going forward economic cost
- traffic sensitive charges set at going forward economic cost, and
- the difference between these going forward costs and embedded cost (rate base overhang).

One can think of these charges as a series of toll gates along a toll road. The access schedule provides for a "toll" for each element of the network used in carrying traffic, i.e., there is a separate charge for each switch, trunk line, etc. Figure 4 provides a comparison of Maine's access rates with those of other states.

Figure 4



Among the states, there are a variety of different schemes for calculation of intraLATA access charges. Different states allow different costs to be recovered through this charge. Most states' access charges are designed to recover book or embedded costs for traffic sensitive elements. In contrast, Maine's access charges use marginal costs to recover traffic sensitive elements and the residual revenue requirement not captured through those traffic sensitive charges to determine common line charges.

Although on average Maine's access rates are well above those in other states, as is the case with intrastate toll rates, some of Maine's rates are significantly higher than those in other states, and some are lower. (See Graph 1 at the end of this document.) Rates that are too high may deter competitors from entering certain market segments. Well over 100 businesses have petitioned the Maine PUC for approval as long distance service providers; most of these petitions have been granted. In addition, the 1996 Telecomm Act, as implemented by FCC, may require changes to interLATA rates. FCC actions may have some bearing on Maine's intraLATA access rates, either directly or indirectly, as well.

Maine's access charge recovers both traffic sensitive and common line charge/non-traffic sensitive costs. It is important to note that, if only going forward economic costs were allowed to be recovered, arguably less than half of the LECs investment would be recoverable through these charges. This circumstance is due in part to the pace of technological development: major investments have become obsolete before they are fully depreciated.

The embedded cost of toll service in Maine is about 26 cents per minute. Given technological advances, the marginal cost of that service may be as low as 1 cent per minute. Who pays for this discrepancy involves major policy considerations. Some states, such as Massachusetts, have essentially divided this cost pro rata among all customers, who pay flat rate plus additional per minute charges for toll service. Maine rates account for this difference by linking rates to volume of usage as outlined above, and allowing recovery of a portion of the investment this represents through access rates. Interconnection charges are another potential

source. Finally, a rate structure subject to constitutional "takings" constraints, could allocate all or a portion of this cost to the LECs stockholders.

NOTE -- Maine PUC has recently opened a docket to revise Chapter 280, which establishes access rates.

G. Interconnection Charges

As noted above, the Telecomm Act and its FCC implementing rules aim to establish a national regulatory framework that swiftly opens telecommunications markets, including local service, to competition. The Act does this in part by requiring LECs to enter into good faith negotiations to arrive at agreements for interconnection ensuring that competitors in the local service markets have access to customers. State PUCs may be called upon to arbitrate one or more aspects of these agreements, e.g., pricing. Competitors' right to "unbundled access", guaranteed under the Telecomm Act, means that a carrier may connect to the network at any point and pay only for those network elements actually used.

In concept, interconnection charges are the rates local service competitors would pay to the incumbent LEC (primarily NYNEX in Maine) for network functions, such as switching, that they cannot economically construct themselves. For example, a cable operator entering the local telephone service market may buy switching as an unbundled network element and use its own cable wires to carry phone calls to its customers.

AT&T (and a number of other potential competitors) and NYNEX have been discussing the terms of a regional interconnection agreement and AT&T has filed for arbitration with the Maine PUC. Pricing issues may be approached on a state by state basis. As discussed in the regulatory framework section, above, the FCC has recently decided the types of cost considerations that may go into establishment of interconnection rates. In addition, the FCC has established default prices that states can use instead of employing the mandated methodology. Key issues in this FCC Order, in which the Maine PUC may well face in its role as arbitrator, concern the extent to which these rates are to be based on "actual costs" of providing interconnection (i.e., set without reference to revenue requirement and embedded cost concerns) and what effects this approach may have on recovery of network investments.

NOTE -- The earlier referenced and recent stay of the FCC interconnection order by the U.S. 8th Circuit Court of Appeals has impacted on this process.

V. STAKEHOLDER GROUPS AND RECENT INITIATIVES

A. Stakeholder Groups

1. The Maine Project

The Maine Project, a partnership for Telecommunications and Information Technology Planning was a collaborative effort by Maine citizens financially supported by the U.S. Department of Commerce, the University of Maine system and the Maine Public Broadcasting System. The project was designed to develop a strategic planning capacity to address the state's telecommunication and information infrastructure needs comprehensively and for the long term.

Membership in the Maine Project stretched across all types of users and providers of services. These individuals were brought together to express their visions and to express goals and principles that should guide the evolution of telecommunications in Maine. The Maine Project pledged to actively encourage the application of their recommended principles, goals and strategies, the full list of these being available in the 1996 Final Report of the Maine Project. Included in this list were the following goals:

All Maine municipalities and their citizens will have equal, affordable, and, when desirable, public and privately supported access to information services that meet their social, business, educational, health care, civic and quality of life needs.

Maine will promote broad citizen participation in the development, use, and evolution of its telecommunications system, overcoming barriers of distance and isolation, cost, and user inhibition.

The Maine telecommunications system must help Maine citizens and businesses acquire the information-age problem-solving skills needed to enhance their competitive position in the global economy.

Educate and train all current and prospective users in the knowledge and skills needed to take full advantage of existing and emerging telecommunications and information technologies.

Maine will maintain, by means of legislation and regulations, an appropriate balance between the rights of confidentiality and privacy and the right to obtain information. Policy makers, providers, and users will take joint responsibility for promoting the continual development and appropriate use of telecommunications for the common good.

The Maine Project proposed several other recommendations that can be found in the report, including

- The Maine Project defines universal access “to be the ability to connect from home to communications links that will support an individual’s basic needs. Those needs include access to health, safety, education, and information services. The ultimate purpose is a mutually supportive and healthy community.
- The Maine Project recommended nineteen actions State government could undertake to further the expansion and efficiency of telecommunications technology in Maine.
- The Maine Project outlines a series of actions that can be undertaken to expand existing and encourage the growth of future community networks in Maine.

Janet Waldron, Commissioner of the Department of Administrative and Financial Services, served as Chair of the Project. Michael Angelakis of State Cable Television served as Vice Chair. Donald Nicoll served as Project Director.

2. The Maine Telecommunications Forum

On May 1, 1995, the Maine Telecommunications Forum published its report, *Maine's 21st Century Telecommunications Network: A Blueprint for Action*, which included "a series of recommendations to Maine policy makers on the principles that should guide our transition into the information era." The recommendations presented in the report represent the consensus of a diverse group of 22 people who worked together over a 10-month period researching the issues surrounding the rapidly changing telecommunications field. The process was facilitated by Gosline and Reitman Dispute Resolution Services, the report was written by Caron Communications, and the effort was underwritten by NYNEX.

With the expressed goals of:

- creating new, sustainable, quality jobs
 - improving and making more efficient our education and health care systems
 - supporting rural development, and
 - recreating government to further connect Maine citizens,
- the Forum developed five primary recommendations for policy makers consideration:

I. *PROMOTE OPEN AND FAIR COMPETITION IN TELECOMMUNICATIONS*

We should commit ourselves, as a state to the introduction of real competition in telecommunications while protecting both

consumers and competitors from unfair or inadequate competition.

II. PROMOTE AN ADVANCED INTERACTIVE NETWORK

Maine should commit itself to the goal of an advanced interactive network that will reach to all corners of the state and will ensure that Maine is among the leading states in telecommunications.

III. BUILD THE FOUNDATIONS OF THIS NEW NETWORK WITHIN THREE YEARS WITH PRIVATE INVESTMENT AND PUBLIC SUPPORT

The first stage of that new network, and its foundations, should be to connect Maine towns and cities to an advanced interactive network within three years.

IV. LOWER PRICES AND EXPAND CHOICES

The national experience with introducing competition in long distance telephone calling brought greater choice and lower prices. The same can be true in Maine with competition in in-state telecommunications.

V. AVOID INFORMATION "HAVES" AND "HAVE-NOTS"

Maine should support the creation of an information safety net ensuring that all Mainers - urban or rural, north or south, rich or poor, disabled or able- will have access to advanced telecommunications through a nearby publicly accessible library, school or town hall.

The work of the Maine Telecommunications Forum culminated in the summer 1995 Blaine House Conference on Telecommunications where the recommendations were presented to the Governor and Maine citizens.

3. Maine Telecommunications Council

In May 1996, the Maine Telecommunications Council began its work of "improving Maine's telecommunications network, expanding telecommunications use and promoting telecommunications-based jobs." A 35-member steering committee including many of the individuals or institutions who participated in the Maine Telecommunications Forum

explained above, was formed and includes diverse representation from business, government, non-profits, education and providers.

Though no formal report has been issued this stakeholder group has been meeting monthly and has articulated its goals as being:

- *improve communications and cooperation among telecommunications activities in Maine,*
- *provide a forum for open discussion of different points of view on the ways in which Maine's telecommunications and information systems can best serve the state's social, economic and community needs,*
- *provide information to the public about telecommunications,*
- *advocate for the implementation of broadly distributed, advanced telecommunications and information systems.*

The Council welcomes and encourages citizen participation.

4. Community Networks

A number of Maine communities have organized grassroots, end user oriented efforts to bring some of the advantages of the information age to schools, libraries, and homes. Most of these local efforts are in the northern half of the State. Many are built over cable rather than telephone systems. Participating communities whose networks are cable based seem well satisfied with the band width and related access speeds desired at the price.

Two notable local network initiatives are based in Aroostook County. Eco-2000, the more long standing of the two, is the product of cooperation between local schools and the local cable system. School instructional and business services are shared over the network along with other information of interest to the participating communities. The Atlas project centered in the Presque Isle area is similar in concept.

There are also school based local networks operating in Brunswick, Bethel, and Greater Waterville. The local cable provider in Brunswick and Waterville plays a significant role in furnishing network services to participating schools. The Bethel project involves Gould Academy as well as a number of members of this western Maine community. In Washington County, there is an effort underway to establish a community network. Collaborative efforts are also underway through the Maine Telecommunications Partnership Project and through the Economic Development District - Center for Business and Economic Research initiative at USM.

B. Recent Initiatives

In a state as geographically dispersed and rural in nature as Maine, the evolution of telecommunications technology is viewed by some as having the potential to be the "great equalizer," breaking down the barriers to economic development and educational equity that had once been constructed by distance. Over the past two years, there have been a number of initiatives to provide statewide access to both the basic information technology (access to the Internet) as well as the advanced technologies, such as ATM (Asynchronous Transfer Mode, which is a broadband, digital transmission method that should allow voice communication, high-speed data transfer and two-way interactive video (Note - the switching of voice communications is not yet mature for ATM; however voice can be carried as part of ATM traffic). Many of the initiatives are in part a result of the recommendations of the Maine Project and the Maine Telecommunications Forum. The efforts have been spearheaded by the Maine Department of Education and the Maine State Library, working closely with the Administration, the Legislature, the Public Utilities Commission and the various telecommunication providers.

The result of these efforts is noteworthy. By June 1997, every school and library in Maine will have access to the Internet and 5 years of free Internet services. By December 1997, every high school in Maine will have the opportunity to access the ATM network, which will allow for two-way interactive video, audio and high-speed data transfer between subscribers.

1. Internet Access for Schools and Libraries

a. Schools and Libraries Information Infrastructure Project (SLIPP)

This project, commonly referred to as the School and Library Network, will provide every public school, public library and approved private school, with e-mail and Internet access. NYNEX will use their PUC-ordered rate reduction of \$4 million per year for up to 5 years to connect a potential 1,200 sites to a 56 kilobit frame relay data network, enabling data transfer among and between all schools and libraries.

Up to \$20 million will be used to pay for schools and libraries to be connected to a statewide frame relay system to provide every location with the hardware frame relay access device (FRAD) necessary to access the 56 kilobit network, and to pay for all costs associated with Internet access, usage and management through the 5 year period.

\$500,000 has been set aside in year one to give grants to institutions that need to purchase computers capable of using this data network. An additional \$500,000 has been earmarked for training and a system has been established to ensure that the appropriate level of training is provided. Experts from UM, USM and Northern Maine Technical College will be offering training to at least 2 individuals at every single school building and library to maximize the likelihood that the network, once installed, will be used and supported throughout the state.

The initial goal of this project is to achieve at least a minimal level of interconnection among all of the K-12 schools and libraries in the state. Recognizing that some locations have already invested in the 56 kilobit or some higher order technology the PUC will allow those schools to spend the cash value of their allotment on their current Internet service or to upgrade their service. The program will be evaluated after one year and the PUC will consider altering the plan to either upgrade the entire system, to provide other telecommunication services or to use excess dollars to lower intrastate toll rates.

b. Toll Plan

In an effort to enhance the long distance calling capabilities of schools and libraries, NYNEX and the independent phone companies joined forces in creating a special "toll plan" for these public institutions. The plan allows all public schools and libraries in Maine to triple the volume of calls for the same price they pay today. While this plan was originally intended to provide users with greater access to Internet, e-mail, and various Maine-based bulletin boards, the SLIIP initiative described above will provide much of this for free. The primary benefit, therefore, will be expanded voice communication.

c. Library Bond

In June 1996, Maine voters approved a \$4.9 million bond issue that will, ultimately, provide libraries throughout the state with access to an on-line, real-time, statewide library catalog system. Funds from the bond will be used to create Maine-oriented databases, access commercial on-line databases, and provide grants to libraries for basic equipment necessary for utilizing Info Net and the Internet in general. This bond will lay the groundwork for a faster, more effective statewide interlibrary lending system.

2. Access to Advanced Telecommunications Technologies for Schools and Libraries

a. ATM Project

In an effort to promote economic development and educational equity in every region of the state through the construction of a statewide fiber based broadband switching network (ATM) the King Administration issued a request for proposals in August 1995. NYNEX won the bid and will bring five test sites up during the fall of 1996. The test sites of Gorham High School, Halldale High School, Baxter School for the Deaf, Presque Isle High School and the University of Maine at Orono, will provide an opportunity for testing the system and working out the problems before the system is offered statewide.

As was mentioned above, ATM stands for Asynchronous Transfer Mode. More simply put, it is a technology that allows for smooth, clear, two-way interactive video as well as high speed data transfer for numerous users. By comparison, the 56 kilobit frame relay system described above will only carry data very effectively although compressed voice and video is accessible and the speed of data transfer slows significantly when more than one or two users are on the system.

The system will be used initially to link State Government facilities, to improve communication between State Government, particularly the Department of Education, and the State's secondary schools, and to promote distance learning. Ultimately, the applications of the ATM system are envisioned to include:

- lifelong learning
- professional development for teachers, doctors and other professionals
- telemedicine: a person on Deer Isle can "visit" his/her Doctor at Eastern Maine Medical Center without driving to Bangor or an X-ray can be instantly read by a specialist in Portland without the person or the X-ray being transported
- educational opportunities for students to take special classes from other high schools or colleges without leaving their home town.

This advanced network will be funded in the following manner

- The capital costs associated with installation of the ATM network will initially be paid by NYNEX
- The capital costs associated with all of the broadcast equipment that will make the 170 approved sites operational will be covered by the \$15 million State bond issue approved in November 1995
- The monthly fees associated with actually using the system (the line fees or usage charges) will be paid from the individual school's budget. The initial monthly fee for ATM usage will be \$1,875 per school. This fee includes basic ATM usage only. If a school opts for greater bandwidth, the monthly fee would be higher. The fees associated with any particular level of service are fixed, no matter what part of the state the school is located in, and can not go up in the 5-year contract period. It can, however, go down if the market offers the same technology a statewide network at a lower price in this time frame.

b. Telecommunications Bond

In November 1995, Maine voters approved a \$15 million bond issue that will pay for one-time capital investment in interactive video and related equipment for 170 sites throughout Maine including high schools, vocational centers and selected libraries. Qualifying schools will be equipped with one broadcast room (two-way interactive video) and two additional instructional classrooms (one-way video). This would enable communities to connect to the planned statewide advanced interactive video fiber based network (the ATM network) which will provide high speed data communications and will promote distance learning, staff development and other applications. The equipment is expected to be in place by December 1997.

VI. ISSUES AND OPPORTUNITIES

This part presents the State Planning Office's assessment of the issues and opportunities central to economic development in Maine that stem from the Telecomm Act and changes taking place within the telecommunications industry. Section A outlines several key issues regarding which additional information and analysis may be needed. Section B points to some current potential opportunities for fostering economic development in telecommunications related businesses in Maine.

A. Issues

1. Reducing rates through competition

A decrease in intrastate toll rates would benefit residential customers and small and medium sized businesses in Maine that lack the purchasing power to negotiate a more favorable rate. In examining the various methods that can be used to achieve these benefits, the following questions arise:

- How can the State further open up the intrastate toll and/or local service markets to competition that may result in lower rates without causing local service or toll rate increases in the more rural areas of the state less likely to attract competition? As competition for intrastate toll and local service increases, what are the implications of "cherry picking" (the capture of individual, high value accounts by companies reselling network services) for the quality and price of services statewide, and particularly in more rural areas that may be less attractive to competitors?
- How can the State simultaneously pursue policies aimed at reducing rates for businesses and other customers, expanding or meeting current Universal Service objectives statewide, and ensuring comparable rates and services in urbanized and rural areas? What telecommunications services (e.g., Internet access or 911 service) should be included under the Universal Service umbrella?
- To what extent, and how, must the State deal with the potentially strandable investment problem?
- In comments to the FCC, the Maine PUC has suggested the use of incentives to bring competitive local service providers to rural areas by providing these competitors with the amount of the subsidy in a rural area that is currently implicit in the incumbent's [most commonly NYNEX's] rates by virtue of company-wide averaging?"
 - Is payment of this subsidy now allocated among customers and telecommunications service providers fairly and in a manner that comports with the Telecomm Act's pro-competition objectives?
 - Where would funds for future payment of this subsidy to local exchange competitors come from? Will federal funds become available through changes to Universal Service policy?
- Some suggest that if NYNEX receives FCC approval to enter the interexchange (interstate long distance) business, the company will realize additional revenue that could result in lower intrastate toll rates in Maine. (A portion of the non-traffic sensitive network costs and common costs now paid by local and toll service consumers in Maine

would be borne by customers of new services.) What additional marginal benefit would NYNEX realize, over and above the amount the company now receives from access fees paid by interexchange carriers?

How might this new revenue source affect intraLATA rates in Maine? How does the AFOR affect any benefits to NYNEX from this new market opportunity?

- Is Maine law authorizing municipalities to enter into exclusive franchise agreements with a single cable operator consistent with the Telecomm Act's competition objectives? How might the municipal franchise authority, potentially requiring negotiations with multiple municipalities, affect cable operators' ability to compete for local exchange service and other telecommunications markets? Will community services (community access and interest channels) be considered?

2. Revisiting State taxation and regulatory policy

- Are the several industries involved in provision of telecommunications services (phone companies, cable operators, wireless services, and utilities) taxed equitably and in a manner that promotes economic development?
- Under what conditions could ownership of telecommunications infrastructure be consolidated in a quasi-public "wires company?" Are there advantages to this approach? Would it deter private investment? Can telecommunications and electric services use the same "wires company?" Could creation and financing of this "wires company" be accomplished in a manner that reduces the rate base overhang now recovered through customer and competitor rates?
- What barriers, biases or incentives does the Maine PUC's regulatory approach to establishment of rates present to increased competition in either the local exchange or intrastate long distance markets? What State telecommunications laws or policies inhibit competition, and are these laws or policies justified by other lawful policy objectives?

3. Reconciling other State policy objectives

- What are the budgetary implications for Maine school districts of statewide availability of advanced telecommunications services, such as those possible through ATM? Will taxpayers authorize use of these services? Will school districts that deploy ATM use these services displace some teachers in the classroom?

- What state services, such as vehicle registration, education and human service benefit provision, may be more efficiently provided via telecommunications? What savings may result? What can be learned from other states that are ahead of Maine in providing services electronically.
- What are the development sprawl related implications of statewide availability of advanced telecommunications services? If rural and urban areas become equally suitable to "high tech" oriented business, what effects on the cost to the State and its municipalities of providing social, public safety, and educational services will result? Is sprawl responsible in part for the high embedded costs in the telecommunications network in Maine?
- How should the FCC's proposed rulemakings related to provision of advanced telecommunications services to schools, hospitals and libraries at discounted rates affect the State's decision to enter into contractual arrangements related to provision of services to these institutions at specified rates?
- To what extent will increased competition result in enhanced low-cost service to schools, i.e., is Time Warner's recent offer to schools in the Portland area a harbinger of things to come?
- What are the budgetary and other implications for Maine municipalities of TelecommAct provisions that:
 - preclude ordinances that patently or effectively ban siting of cellular communications towers, and
 - limit franchising authority over cable service providers?
- How best can the State coordinate and work with the several ongoing public and private sector initiatives to improve Maine's telecommunications industry and the level of service statewide?
- What discrete measures are needed to improve Maine business conditions for cellular and wireless communications, telecommunications manufacturing, software developers, and other growing sectors of the telecommunications industry?

4. Investing in infrastructure

- What steps are underway to ensure interoperability of key telecommunications initiatives now envisioned? For example:

- When is NYNEX's proposed ATM backbone to be fully connected to the public switched network?
- Can cable operators tie into the ATM backbone as a means to enhancing services provided to their customers? What will the access rates be? What are the anticipated tariffs for the service? Will cable operators seek a cheaper alternative?
- Have businesses made extensive use of comparable ATM services where available elsewhere in the country? What indicators of business demand for ATM are there in Maine?
- Can further improvements in network reliability provide the State with a competitive edge in attracting business investment? How does the overall reliability of Maine's telecommunications network compare with that of other states?
- What are the bottlenecks in our telecommunications networks? Are rates and prices designed to reflect these bottlenecks? How much will it cost to eliminate them and is such an investment worthwhile?
- Are bandwidth and switching capabilities of the network adequate to meet significant expansions and very different uses of the network?

5. Public awareness and demand

- Is there any economics trends information, such as data suggesting declining real wages in Maine, that should be considered in gauging the State's needs and demands, and the geographic distribution of those needs and demands, for telecommunications services over the next several years?
- How can the State identify and efficiently direct training and education resources to existing businesses and industries for whom effective use of emerging telecommunications resources might provide a competitive edge, including meaningful entry into international markets? Does the Maine Telecommunications Education Fund offer a suitable vehicle for these communications?
- How can the State raise the level of household and business familiarity with telecommunications tools in ways that develop wise consumers, promote readiness to take advantage of existing tools and opportunities and foster creativity to envision new and expanded uses? Can community based networks help in curtailing costs?

- Why are the rates associated with ISDN so high? Is it because prices are set based on costs or on value of service, and is the latter appropriate in a regulatory regime?

B. Opportunities

1. Enhancing the quality and reducing the cost of public education

The upgrading of the quality of telecommunications services, such as interactive video, available at competitive rates to Maine public schools could help produce a more skilled work force trained to use information technology effectively. Widespread availability of advanced telecommunications could also affect school districts' bottom line without compromising the quality of the educational experience available: with "real time" video conferencing, a Spanish teacher in Portland, for example, could reach and interact with students throughout the State.

Notwithstanding these benefits, in the short term it may be advisable for State policy makers to await the outcome of FCC proceedings regarding carriers' obligations to provide advanced telecommunications services to rural areas comparable in quality and price to urban areas and to provide discounted services to schools, hospitals and libraries before making significant commitments of State resources. The FCC's actions may reduce the public benefits of any bargain the State enters before that date. In addition, competition among telecommunications carriers may result in additional opportunities for expanding the tools available to educators.

2. Reducing the cost of State services and information distribution

Improved telecommunications offer opportunities for creating efficiencies in delivery of state services, such as distribution of entitlements payments and licensing, and dissemination of information aimed at general public awareness of and participation in the actions of government

3. Reducing health care costs

Telemedicine may be a key ingredient both in helping companies to lower insurance costs and in cutting costs for State government by allowing for health care to be provided to rural areas more efficiently. This provision may also affect Maine's hospital industry in that with suitably high speed video communications certain profitable services, such as radiology, may be provided at lower cost from a remote location.

4. Attracting manufacturing businesses